

In the claims:

Claims 1-7 cancelled.

8. (currently amended) A method for correcting a sensor system selected from the group consisting of an angle-measuring sensor system, a distance-measuring sensor system, and ~~both, an angle-and a distance-measuring sensor system~~ comprising the steps of evaluating sinusoidal and cosinusoidal measurement signals ( $x_i$   $y_i$ ) obtained by scanning a moved measurement object in a magnetic field; correcting errors of the measurement signals ( $x_i$   $y_i$ ) selected from the group consisting of ~~a~~ angle errors, phase errors, and ~~both;~~ angle and phase errors providing for the correcting the sensor system a compensation process and a subsequent correction process; in the compensation process, providing offset values ( $x_0$ ,  $y_0$ ) from a specified number ( $N$  of  $j=1\dots N$ ) of pairs of measured values ( $x_i$ ,  $y_i$ ) obtained by rotating a magnetic field, for the sinusoidal and cosinusoidal measurement signals ( $x_i$   $y_i$ ) and correction parameters ( $m_1$ ,  $m_2$ ) by applying ~~thea~~ least squaressquare of errors method and solving a linear system of equations; determining a corrected pair of measured values ( $x'_i$   $y'_i$ ) from each pair of the measured values ( $x_i$   $y_i$ ) in the correction process, whereby determining the corrected pair of the measured values ( $x'_i$   $y'_i$ ) in the correction process based on the relationship

$x'_i = x_i - x_0$  and  $y'_i = m_1 \cdot x'_i + m_2 (y_i - y_0)$ , whereby determining the pair of measured values  $(x_i, y_i)$  in the compensation process located on ellipses and satisfying the following equation:

$$f(x, y) = w_1 \cdot x^2 + 2 \cdot w_2 \cdot x \cdot y + w_3 \cdot y^2 + 2 \cdot w_4 \cdot x + 2 \cdot w_5 \cdot y \pm 1,$$

whereby determining parameters of an ellipse ~~ellipses~~ using the least square of errors (g) method, with

$$g = \sum_{i=1}^N f(x_i, y_i)^2 = \min; \text{ and}$$

determining an angle ( $\alpha$ ) to be measured from particular corrected pairs of the measured values  $(x'_i, y'_i)$  using an algorithm.

Claim 9 cancelled.

10. (currently amended) A method as defined in claim 8; and further comprising determining an angle ( $\alpha$ ) to be measured in the correction process based on the relationship  $\alpha = \text{arc}(x' + i \cdot y')$ .

11. (currently amended) A method as defined in claim 8; and further comprising determining a derivative of the square of errors (g) with respect to the parameters of the ellipse ( $w_1 \dots w_5$ ), and setting a particular derivative equal to zero, to determine a minimum, and using the particular derivatives to create a linear system of equations, so that, using

a suitable elimination process, the system of equations is solved for required parameters of the ellipse ( $w_1 \dots w_5$ ) and, based on this, the offset values ( $x_0, y_0$ ) and the correction parameters ( $m_1, m_2$ ) are determined.

Claims 12-14 cancelled.

15. (new) A method as defined in claim 8, wherein the linear equation system corresponds to the equation

$$\begin{bmatrix} sx4 & 2 \cdot sx3y & sx2y2 & 2 \cdot sx3 & 2 \cdot sx2y \\ sx3y & 2 \cdot sx2y2 & sxy3 & 2 \cdot sx2y & 2 \cdot sxy2 \\ sx2y2 & 2 \cdot sxy3 & sy4 & 2 \cdot sxy2 & 2 \cdot sy3 \\ sx3 & 2 \cdot sx2y & sxy2 & 2 \cdot sx2 & 2 \cdot sxy \\ sx2y & 2 \cdot sxy3 & sy3 & 2 \cdot sxy & 2 \cdot sy2 \end{bmatrix} \begin{bmatrix} w_1 \\ w_2 \\ w_3 \\ w_4 \\ w_5 \end{bmatrix} = \begin{bmatrix} -sx2 \\ -sxy \\ -sy2 \\ -sx \\ -sy \end{bmatrix}$$

and wherein

$$sx = \sum_{i=1}^N x_i \quad sy = \sum_{i=1}^N y_i \quad sxy = \sum_{i=1}^N x_i \cdot y_i$$

$$sx2 = \sum_{i=1}^N x_i^2 \quad sy2 = \sum_{i=1}^N y_i^2 \quad sx2y = \sum_{i=1}^N x_i^2 \cdot y_i$$

$$sx3 = \sum_{i=1}^N x_i^3 \quad sy3 = \sum_{i=1}^N y_i^3 \quad sxy2 = \sum_{i=1}^N x_i \cdot y_i^2$$

$$sx4 = \sum_{i=1}^N x_i^4 \quad sy4 = \sum_{i=1}^N y_i^4 \quad sxy3 = \sum_{i=1}^N x_i \cdot y_i^3$$

is, and with the determined ellipse parameters

$$sx3y = \sum_{i=1}^N x_i^3 \cdot y_i$$

$w_1 \dots w_5$

$$x_0 = \frac{w_2 \cdot w_4 - w_1 \cdot w_5}{w_1 \cdot w_3 - w_2^2}$$

and

$$y_0 = \frac{w_2 \cdot w_4 - w_1 \cdot w_5}{w_1 \cdot w_3 - w_2^2}$$

via the intermediate values

$$\nu = \sqrt{\frac{w_1 + w_3 - r}{w_1 + w_3 + r}}$$

with

$$r = \sqrt{(w_1 - w_3)^2 + 4 \cdot w_2^2}$$

and

$$m_1 = \frac{w_2}{r} \cdot \left( \frac{1}{\nu} - \nu \right)$$

$$m_2 = \frac{1}{2} \cdot \left( \left( \frac{1}{\nu} + \nu \right) - \left( \frac{1}{\nu} - \nu \right) \frac{w_1 - w_3}{r} \right)$$

are calculated